

Python - Functions

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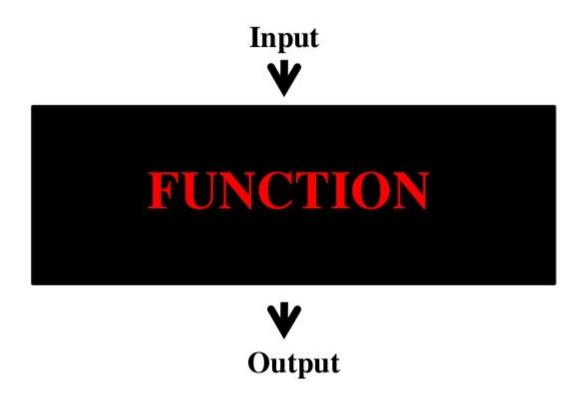
Availability of slides

- All materials are freely available (CC BY) after the lectures:
 - StudIP: 'Python for Life Scientists'
 - GitHub: https://github.com/bpucker/teaching
- Questions: Feel free to ask at any time
- Feedback, comments, or questions: b.pucker[a]tu-bs.de

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What is a function?





Elements of a function

```
Function
                  Function name
                                          Argument/parameter
                (no spaces in name!)
   indicator
 10
     ₽def
           sqrt root( number ):
                calculates sqrt root of given number
 11
 12
 13
           sqrt root = number**0.5
                                                #calculation
 14
 15
                                                       Body of function
           return sqrt root
                                    Return of result
                                                   (everything happens here)
 16
                                       (optional)
 17
 18
      result = sqrt root( 125 )
                                           #function call
 19
      print(result)
                                  Calling function with an argument
Function is only
                                     (definition above required)
defined (nothing
  happens)
                                                   Function ends at return
                                                   (following lines would be ignored)
```



Advantages of functions

- Generate modules: write it onces and apply it often (for different purposes)
- Structure: increase readability of your code
- Nested calculations are enabled by functions



Important functions

- str(<VARIABLE>) #converts variable to string
- int(<VARIABLE>) #converts variable to integer
- float(<VARIABLE>) #converts variable to float
- <STRING1>.count('<STRING2>') #counts occurrences of string2 in string1
- <LISTE>.count(<LISTELEMENT>) #counts occurrences of element in list
- len(<STRING/LIST>) #calculate length of string/list
- Warning: Functions return error if invalid arguments (e.g. wrong variable type) are given!



Exercises - Part2

- Primer: 'ATGCCATGCATTCGACTACG'
- 2.1) Calculate length of primer and print it!
- 2.2) Get number of Gs and print it!
- 2.3) Write a function to analyze the nucleotide composition of a primer and print it!
- 2.4) Is it a suitable primer? Why (not)?



Time for questions!

